

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claim 1 (currently amended) A method of producing a biologically active oligomeric form of α -lactalbumin, which method comprises contacting α -lactalbumin, ~~at least some of~~ which is in the molten globule-like state, with a conversion reagent selected from the group consisting of fatty acids and lipids, wherein said fatty acids and lipids are found in a casein containing fraction obtainable from human milk, which wherein said method results in the production of said biologically active oligomeric form.

Claim 2 (currently amended) A method according to claim 1 wherein α -lactalbumin ~~α -lactalbumin, at least some of which~~ is in the molten globule-like state, state is contacted with the conversion reagent under conditions which allow ion exchange to take place.

Claim 3 (original) A method according to claim 1 wherein α -lactalbumin in the molten globule-like state is applied to an ion exchange column, which contains the conversion reagent.

Claim 4 (original) A method according to claim 2 wherein the ion exchange column is an anion exchange column.

Claim 5 (original) A method according to claim 2 or claim 3 wherein the ion exchange column has been eluted with the conversion reagent.

Claim 6 (currently amended) A method according to ~~any one of claims 1 to 5~~ claim 1 wherein ~~a substantial portion~~ at least 50%w/w of the α -lactalbumin is in the molten globule-like state.

Claim 7 (original) A method according to claim 6 wherein the α -lactalbumin is subjected to a pretreatment step in order to maximise the amount of molten globule-like material present.

Claim 8 (currently amended) A method according to claim 7 wherein ~~in the~~ pretreatment ~~step~~, step comprises contacting the α -lactalbumin ~~is contacted~~ with a calcium chelating agent.

Claim 9 (original) A method according to claim 8 wherein the calcium chelating agent is ethylene diamine tetraacetic acid.

Claim 10 (currently amended) A method according to claim 7 wherein the pretreatment step comprises ~~exposure~~ exposing the α -lactalbumin to a low pH of 2.

Claim 11 (currently amended) A method according to claim 10 wherein the ~~low pH of 2~~ is created by addition of hydrochloric acid, ~~so as to reduce the pH to the order of 2~~.

Claim 12 (currently amended) A method according to claim 8 wherein the pretreatment step comprises heating the α -lactalbumin to a temperature of from 25°C-120°C.

Claim 13 (original) A method according to claim 12 wherein the temperature is from 70°C to 120°C.

Claim 14 (currently amended) A method according to ~~any one of claims 1 to 6~~ claim 1 wherein α -lactalbumin is applied to an ion exchange column together with a molten globule inducing reagent, which will induce it to form the molten globule-like state.

Claim 15 (original) A method according to claim 14 wherein the molten globule inducing reagent is a calcium chelating agent which is present in the elution buffer.

Claim 16 (currently amended) A method according to claim 15 wherein the calcium chelating agent is ~~EDTA~~ ethylene diamine triacetic acid (EDTA).

Claims 17-18 (cancelled)

Claim 19 (currently amended) A method according to claim ~~1~~ ~~17~~ ~~or claim 18~~ wherein the fatty acid is oleic acid.

Claim 20 (currently amended) A method according to ~~any one of the preceding claims~~ claim 1 wherein the α -lactalbumin is a mutated form of the native protein in which calcium binding sites are modified so that they do not bind calcium.

Claim 21 (currently amended) A method according to claim 20 wherein ~~a~~ at least some cysteine residues ~~residue~~ of the α -lactalbumin ~~is~~ are mutated.

Claim 22 (currently amended) A method for producing an oligomeric form of α -lactalbumin which comprises exposing a source of α -lactalbumin to an ion exchange medium which has been pretreated with a casein containing fraction of milk, or an active component thereof selected from the group consisting of fatty acids and lipids found in a casein containing fraction obtainable from human milk, and recovering α -lactalbumin in an oligomeric form therefrom.

Claim 23 (original) A method according to claim 22 wherein the active component of casein is oleic acid.

Claim 24 (currently amended) A method according to claim 23 wherein the oleic acid is in substantially pure form.

Claim 25 (original) A method according to claim 22 wherein the ion exchange medium has been treated with a casein containing fraction derived from human milk.

Claim 26 (currently amended) A method according to claim 25 wherein the ion exchange medium has been treated with a casein containing milk fraction which has been previously frozen or is derived from frozen milk.

Claim 27 (original) A method according to claim 25 or claim 26 wherein the casein used in the pretreatment of the ion exchange medium has been subjected to hydrolysis.

Claim 28 (currently amended) A method according to ~~any one of claims 22 to 27~~
claim 22 wherein ~~a substantial portion of~~ the α -lactalbumin applied to the ion exchange
medium is in the molten globule-like state.

Claim 29 (original) A method according to claim 28 wherein the α -lactalbumin is
formed into the molten globule-like state by contacting it with a calcium chelating agent.

Claim 30 (original) A method according to claim 29 wherein the calcium chelating
agent is ethylene diamine tetraacetic acid.

Claim 31 (original) A method according to claim 29 or claim 30 wherein the calcium
chelating agent is contacted with the α -lactalbumin prior to contact with the ion exchange
medium.

Claim 32 (currently amended) A method according to claim 30 ~~or claim 31~~ wherein
the calcium chelating agent is added to an elution buffer which is then used to effect the
contact between the α -lactalbumin and the ion exchange medium.

Claim 33 (currently amended) A method according to claim 26 wherein the α -
lactalbumin is subjected to a pretreatment step involving exposure to a low pH.

Claim 34 (currently amended) A method according to claim 26 wherein the α -
lactalbumin is subjected to a pretreatment in which it is heated to ~~an elevated~~ a temperature of
from 25°C to 120°C

Claim 35 (original) A method according to any one of claims 28 to 30 and 32 to 34
wherein the ion exchange medium is arranged in a column.

Claim 36 (currently amended) A method according to ~~any one of claims 28 to 35~~
claim 28 wherein the ion exchange medium comprises ~~DEAE~~ Diethylaminoethanol (DEAE)
Trisacryl.

Claim 37 (original) A method according to ~~any one of claims 28 to 36~~ claim 28
which comprises passing a casein containing milk fraction or one or more active components

thereof in an ion exchange buffer down an ion exchange column, washing the column with ion exchange buffer, and then passing a source of α -lactalbumin dissolved in the ion exchange buffer down the ion exchange column in the presence of a salt concentration gradient.

Claim 38 (original) A method according to claim 37 wherein the ion exchange buffer is Tris-HCl.

Claim 39 (original) A method according to claim 37 or claim 38 wherein the salt concentration gradient is produced using an ion exchange buffer in which sodium chloride is dissolved.

Claim 40 (original) A method according to claim 39 wherein the column is washed by elution of ion exchange buffer twice.

Claim 41 (currently amended) A method according to ~~any one of the preceding claims~~ claim 1 wherein the ~~said source of~~ α -lactalbumin comprises monomeric bovine α -lactalbumin.

Claim 42 (currently amended) A method according to ~~any one of claims 1 to 40~~ claim 1 wherein the ~~said source of~~ α -lactalbumin comprises monomeric human α -lactalbumin.

Claim 43 (original) An ion exchange medium for use in the method of any one of the preceding claims, said medium having been treated with a casein containing milk fraction or an active component thereof.

Claim 44 (currently amended) An ion exchange medium according to claim ~~22~~ 43 wherein the medium has been treated with an active component of casein comprising oleic acid.

Claim 45 (currently amended) An ion exchange column which comprises an ion exchange medium according to claim 43 or claim 44.

Claim 46 (currently amended) An oligomeric form of α -lactalbumin obtained by a method according to claim 1 ~~any one of claims 1 to 42~~.

Claim 47 (new) A method according to claim 20 wherein the calcium binding site is destroyed.

Claim 48 (new) A biologically active oligomeric form of non-human α -lactalbumin, obtainable by a method according to claim 1.

Claim 49 (new) A biologically active oligomeric form of bovine α -lactalbumin, obtainable by a method according to claim 1.